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STATEMENT OF INTEREST

The Association of State Floodplain Managers (ASFPM) is an organization of professionals involved in floodplain management, flood hazard mitigation, the National Flood Insurance Program, and flood warning and recovery. Members include floodplain management officials from almost all states and many local governments, leaders from the research community in engineering, hydrologic forecasting and other fields, and the insurance industry. The Association supports comprehensive management of the nation's floodplains utilizing structural and nonstructural approaches to reduce loss of human life and property damage from flooding, to preserve the natural values of floodplains, and to avoid actions that exacerbate flooding. It has an interest in the floodplain easement condition in this case because the City of Tigard's comprehensive floodplain program is consistent with recommended practice.

SUMMARY OF ARGUMENT

Floods cause billions of dollars in annual damages. Although floods are natural events, floodplain damages are the result of human activities in floodplains. Floodplain development can result not only in loss of life and private property damage on land developed in floodplains but also social costs including fiscal impacts on taxpayers, increased flood damages elsewhere, and degradation of the adjacent river. For this reason, floodplain management regulations have become broadly established and significantly limit new development in floodplains.

Dolan's claim that a floodplain easement condition to permit channel improvement constitutes a Taking ignores the special contribution to flood problems caused by development in or adjacent to floodplains. Absent the channel improvement, expected development in Tigard would place much of Dolan's

property at risk of flooding. Dolan's proposed development would increase the value and physical extent of property subject to that flooding, with a broad range of consequences to Dolan and others. Tigard's comprehensive flood management program benefits Dolan by making developers throughout Tigard responsible for significant water storage to offset their increased stormwater. But that storage would not protect Dolan's property from large future floods. Dolan's land dedication therefore also primarily benefits Dolan because Tigard would use the area to modify the channel at public expense and thereby greatly limit Dolan's flood risk. Tigard's ordinance is also part of an integrated federal, state and local flood management program that provides Dolan benefits such as flood insurance and federal disaster relief.

ARGUMENT

I. FLOOD PROBLEMS AND THEIR MANAGEMENT IN THE UNITED STATES

A. *Extent, Nature and Causes of Flooding in the United States*

Floods are natural events that reflect the inherent large variability, both seasonal and annual, in precipitation and the patterns of water runoff from the landscape. Although floods are natural events, flood damages are human events that result from human activities in areas susceptible to flooding. Those activities have responded to a variety of human needs, including the need to be near water for transportation purposes, the search for fertile agricultural lands, and the general search for additional land for development in developing communities.

Although many needs for human activities in floodplains are compelling, the cost of our patterns of development have been high. Per capita deaths from flooding have remained fairly

constant, averaging 153.7 deaths per year per 200 million people from 1916 through 1940, 86.1 from 1941 through 1965, and 144.8 from 1966 through 1985. Federal Interagency Floodplain Management Task Force, *Floodplain Management in the United States: An Assessment Report* Vol. 2 at 3-16 (1992) (hereinafter *Interagency Floodplain Assessment*).[1] Property damages from floods have varied from year to year but have generally risen both in absolute terms and per capita. For example, the average annual damages from the period 1916 to 1960 in 1985 dollars were $592 million, while the annual average damages from 1951 to 1985 were $2.18 billion. *Id.* at 3-30.

The decision by a landowner to build in a floodplain of course exposes people who might use that development to harm. It can also have broad consequences for taxpayers and others who might be affected by flooding, and for public health and the environment.

Fiscally, floodplain development often leads to increased taxpayer expense. Governments have usually responded to floods with disaster aid. Because the federal government provides disaster aid through more than a dozen agencies and many separate funds,[2] the exact amount of federal aid provided

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[1] This report was compiled under the supervision of an interagency task force including the Federal Emergency Management Agency, the Departments of Agriculture, Army, Commerce, Energy, Housing and Urban Development, Interior and Transportation, the Environmental Protection Agency and the Tennessee Valley Authority. Much of this background discussion is taken from this comprehensive, recent source.

[2] A special appropriation for the Upper Mississippi flood last summer provided money to fourteen federal departments or independent agencies, and many of these departments received money for several separate services or agencies. *See* Emergency Supplemental

over the years is unknown. However, the President's Disaster Relief Fund spent more than $5.2 billion between 1965 and 1989 for flood related disasters. *Interagency Floodplain Assessment* at 3-23. Illustrating the significance of other payments, the Federal Highway Administration spent on average more than $100 million per year between 1986 and 1989 on disaster aid primarily for flooding although the Highway Administration is a relatively small disburser of disaster aid.[3] In addition to these costs, the federal government has provided much of the funding for structural flood control measures. Congress estimated in 1973 that the Army Corps of Engineers had spent $9 billion on flood works since 1936,[4] and the Corps has continued to devote roughly one billion dollars each year to flood control.[5] State and local governments have provided billions more in disaster aid and flood control protection.

Physically, development in floodplains can increase the areal

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Appropriations for Relief from the Major Widespread Flooding in the Midwest Act of 1993, P.L. 103-75, 107 Stat. 739 (1993).

[3] In the Mississippi special flood appropriation, the Highway Administration received up to $175 million out of a total disaster budget of approximately $6 billion. *Id.*

[4] Senate Rep. No. 93-583, *reprinted in* 1973 *U.S. Code Cong. & Ad. News* 3217, 3219.

[5] Between 1983 and 1992, the Army Corps of Engineers received annual appropriations of never less than $673 million and generally more than $800 million for new flood control construction. *Annual Report Fiscal Year 1992 of the Secretary of the Army on Civil Works Activities* (1 October 1991 -30 September 1992, Vol. II (summary statistics listed on back of front cover). By 1983, it was also devoting roughly $200 million annually to maintaining flood control works. *Interagency Floodplain Assessment* at 12-6.

extent, or destructiveness, of flooding elsewhere.[6] These effects can occur in many ways. Development can directly displace the natural storage capacity of floodplains. That probably means that floodwaters move more rapidly downstream, increasing the size, velocity and therefore destructiveness of flood peaks. Alternatively, constriction of the floodway (the portion of a floodplain that during a flood tends to maintain relatively deep, faster moving water) tends to cause increased flooding upstream. It creates a bottleneck that slows water down and that backs water up much the way traffic bottlenecks cars.

Development can also lead indirectly to flooding elsewhere because people in floodprone areas tend to demand structural means of controlling flooding.[7] Floodwalls and levees essentially wall a river away from its floodplain. Stream channelization allows streams to convey more water rapidly downstream and therefore allows less floodwater to build up and spread out into the floodplain. Dams and reservoirs increase water storage and therefore can decrease the volume of floodwaters. Although all these techniques can be effective in limiting flooding in particular areas, they inherently involve the displacement of water from some locations to others and therefore have the potential to increase flooding elsewhere. For example, building levees on one side of a river will increase flooding on the other

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[6] Limiting some of these impacts is a key requirement of National Flood Insurance Regulations. *See infra* at 14. For a general discussion of the impacts discussed in this and the following paragraph, see T. Dunn & L.B. Leopold, *Water in Environmental Planning* (1978).

[7] For amplification of the discussion in this paragraph, see Dunn & Leopold, *supra*; William. G. Hoyt & Walter Langbein, *Floods* (1955); National Science Foundation, *A Report on Flood Hazard Mitigation* 15 (1980).

side and possibly downstream. For that reason structural flood control measures need to be integrated both with each other and with non-structural flood control measures.

Floodplain development also can have a range of severe public health and other environmental impacts. Ecologically, "rivers and their floodplains are so intimately linked that they should be understood, managed and restored as integral parts of a single ecosystem."[8] Floodplains, particularly those areas fairly frequently flooded, tend to serve as key sources of food supply, or as spawning grounds, for fish or other river life. River water quality also often depends on floodplain areas because floodplain vegetation and soils often filter out pollutants as floodwaters move over them, or as water moves toward rivers. This filtration function applies not merely to pollutants added by man but to sediment and nutrient inflows that occur naturally and that are kept in balance in part by floodplain biological activity. The natural vegetation in floodplains also serves to hold down sediment that otherwise can erode into streams, affecting the penetration of light or smothering bottom-dwelling life. In addition, the very manner in which floodplains receive, store or convey flood flows means that they physically control seasonal patterns of water flow. Those patterns themselves have a pronounced impact on aquatic life, for the amount of water moving through a stream often determines suitability for spawning, rearing or migratory behavior, and aquatic life has evolved to rely on specific patterns.

Development in floodplains not only eliminates these

[8] National Academy of Sciences, National Research Council, Committee on Restoration of Aquatic Ecosystems, *Restoration of Aquatic Ecosystems: Science, Technology and Public Policy* 184-85 (1992). The following paragraph summarizes discussion *id.* at 165-206 and 265-277; *see also Interagency Floodplain Assessment* at 2-1 through 2-17.

important natural interactions between the main river channel and its floodplain, but development also brings a new source of human pollutants into areas that are exposed to floodwaters. During floods, these pollutants can pose significant health risks. In addition, measures such as channels, levees and dams designed to protect structures from flooding tend to further disturb the natural patterns of water flow. As a result, alterations of floodplains, or dams and levees used to control and redirect floodwaters, can result in pronounced degradation of natural river and estuarine systems.[9]

Flooding in the Upper Mississippi basin in the summer of 1993 illustrates all these qualities of flooding and floodplain development. The 1993 flood inundated over 17,000 square miles of the Upper Mississippi River basin in nine states.[10] It caused damages roughly estimated at 12 billion.[11] It dislocated at least 82,000 families, of whom many remain dislocated.[12] An estimated 527,000 lost drinking water in 33 separate

[9] In addition to the National Research Council study above, other good discussions include A. Brookes, *Channelized Rivers: Perspectives for Environmental Management* (1988); Edward L. Thackston & Robert Sneed, *Review of Environmental Consequences of Waterway Design and Construction Practices as of 1979* (Tech. Report E-82-4, Office of Chief of Engineers USACE Waterways Exper. Station 1982).

[10] House Report No. 103-358, *reprinted in* 1993 *U.S. Code Cong & Ad. News* (Looseleaf Pamphlet No. 11A) 2545, 2546.

[11] M.F. Myers & G.F. White, "The Challenge of the Mississippi Flood," 35 *Environment* 7, 25 (1993).

[12] Telephone communication with Larry Zensinger, Coordinator of Federal Emergency Management Agency for Midwest Flood Mitigation Projects (Feb. 13, 1993).

communities,[13] and many other people's lives were disrupted by alterations in transportation or by economic dislocations.

Like flooding generally, the 1993 flood was also not unprecedented. The Upper Mississippi River basin suffered from severe floods in 1880, 1917, 1927, 1947, 1951, 1952, 1960, 1965, 1969, 1973, and 1978.[14] Moreover, although peak discharge volumes were higher in 1993 at many sites than previously recorded, much damage occurred in areas in which peak discharges were of a volume expected to occur as often as every ten or twenty-five years.[15] The total volume of water involved in the flood was 20% less than the total volume involved in a flood measured in 1844. *Id.*

The fiscal impact of the flood is reflected in Congressional appropriations of approximately $6 billion in emergency relief for the flood. *See supra* note 2. Those funds are in addition to many more millions payable from the federal flood insurance program or by states and localities.

The flood also illustrates the potential impact that flood

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[13] R. Koenig, "Water Companies Seek Higher Ground: EPA Studying Problem of Inundated Plants," *St. Louis Post-Dispatch* p. 1 (Oct. 10 1993).

[14] U.S. Army Corps of Engineers, "Mississippi River Flooding" *in* Association of State Wetlands Managers & Association of State Floodplain Managers, *Background Materials and Sourcebook: Workshop 2, Post Flood Recovery and the Restoration of Mississippi Basin Floodplains Including Riparian Habitat and Wetlands* (September 28-29, 1993).

[15] C. Parrett, N.B. Melcher, & R.W. James, Jr., *Flood Discharges in the Upper Mississippi Basin*, 1993, U.S.G.S. circular no. 112--A (Washington, D.C., 1993) (results reprinted in Myers & White, *supra* at 26.)

control structures have on flooding elsewhere, particularly if not integrated into an overall system. The Upper Mississippi basin contains more than six thousand miles of levees, many large dams, and thousands of miles of channelized streams which have evolved without common plan or analysis. *See* U.S. Army Corps of Engineers, *supra*. Although findings regarding individual floods have been controversial, hydrologists have claimed that these levees increase the magnitude of flooding downstream by eliminating floodplain storage.[16]

The Mississippi region and this flood also illustrate the health and environmental impacts of floodplain development. For example, floodwaters rushing over agricultural lands polluted the Mississippi and tributaries with large quantities of pesticides and eventually caused a massive atrazine bloom in the Gulf of

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[16] In a famous paper, Charles Belt, Jr., estimated that flood levels in St. Louis during the 1973 flood were several feet higher as a result of the construction of levees along the Upper Mississippi and Missouri Rivers upstream. C. Belt., Jr., "The 1973 Flood and Man's Constriction of the Mississippi River," 189 *Science* 681-84 (1975). Studies have come to similar conclusions regarding the 1993 flood. R. Koenig & V. Tipton, "The Flood That Wasn't: A Computer Model Shows How the Flood of '93 Could Have Done Much More Damage -- Or Much Less," *St. Louis Post Dispatch*, Sec. B, p. 1 (Dec. 26, 1993).

Mexico.[17] In addition, the flood brought into the river contamination from many hazardous waste sites and other toxic pollutants from common facilities such as gasoline stations.[18]

B. *Evolution of Contemporary Floodplain Management: The Multi-Faceted Strategy That Attempts To Limit Flood Damage Exposure*

During the latter part of the nineteenth century and the first part of the twentieth century, national flood control policy revolved primarily around the construction of structural flood control methods by individual projects -- projects authorized generally after a major flood disaster.[19] In 1942, Dr. Gilbert White first expressed modern theories of floodplain management in a famous dissertation. These theories became national policy in 1966 through the release by a Presidential task force of "A

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[17] Two studies found these high pesticide levels. One at the University of Iowa is reported in C. Bullard, "High Herbicide Levels in Rivers After Flooding," *Des Moines Register* p. 17 (Sept. 10, 1993). A study by the United State Geological Survey is reported in Donald A. Goolsby, William. A. Battaglin & E. Michael Thurman, *Occurrence and Transport of Agricultural Chemicals in the Mississippi River Basin, July Through August 1993*, U.S.G.S. Survey Circular 1120-C (Washington, D.C. 1993).

[18] For example, the U.S. Environmental Protection Agency identified 24 Superfund sites affected by flooding. U.S. Environmental Protection Agency, *Superfund Sites Affected by Flooding Region VII* (Aug. 2, 1993).

[19] Discussion of the evolution of floodplain management policy is set forth in *Interagency Floodplain Management Assessment*, chapter 4.

Unified National Program for Managing Flood Losses," House Document 465, and through Executive Order 11296. The basic concept underlying these documents was that flood damages arose from the placement of human activities in the way of floods. Those activities occurred sometimes for good reasons and sometimes for irrational reasons that reflected lack of knowledge, subsidies or other interferences with rational decisionmaking. These policies called for efforts to assure "the most effective use of floodplains" through a range of flood management measures: flood proofing of structures through techniques like elevation, limitations on development in floodplains, judicious use of structural flood control measures, emergency measures, public relief and insurance.

Congress insured the broad implementation of these ideas by adopting national flood insurance in 1968 and by strengthening the program in 1973.[20] In significant part, Congress was motivated by fiscal concerns, which included mounting costs for disaster aid and federal flood control projects,[21] and flood

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[20] Pub. L. 90-448, Title XIII, 82 Stat. 572 (1968) and Pub. L. 92-234, 97 Stat. 975 (1973) (codified as amended at 42 U.S.C. Sec. 4001-4128).

[21] *See* H.R. No. 1585, *reprinted in* 1969 *U.S. Code Cong & Ad. News* 2873, 2967 (insurance designed to "reduce the mounting federal expenditures for disaster relief assistance"); S. Rep. No. 93-583, *reprinted in* 1973 *U.S. Code Cong & Ad. News* 3217, 3218-3219 ("In recent years the Federal Government has assumed more responsibility for providing relief and for partial indemnification for property losses resulting from floods. In addition to relief, the Federal Government has spent large sums of money for flood prevention. The cost to the Federal Government as a result of these disasters has been massive.")

damage to federally subsidized development.[22] Congress also believed that these subsidies effectively encouraged floodplain development.[23] But Congress recognized that private insurance was not normally available because of the high risk. The quid pro quo for continuing to provide disaster aid and structural flood control, and for making insurance available, was to require that localities adopt strict land use controls to limit flood damages. *See* 42 U.S.C. Sec. 4002(b)(3).

Not long after adoption of federal flood insurance,

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[22] Sec. 2(a)(3) of Pub. L. 93-234, 87 Stat. 975 (1973), 42 U.S.C. Sec. 4002(a)(3) (1992).

[23] See 42 U.S.C. Sec. 4002(a)((1)(2) (finding accelerating disaster costs in part because of federal subsidies). In the legislative history, Congress quoted with approval a report by the Secretary of Housing and Urban Development.

> In spite of the flood protection programs of the past 30 years, the average annual flood hazard is now greater than before such programs began, because people have moved themselves and their property into flood-prone areas faster than flood-protection works have been built. Many factors have been responsible for this development of flood-prone areas--the general growth of population, income, and wealth among others; but it is also clear that the substantial separation of costs from benefits--whereby the general public bears most of the costs of flood-protection works while individual members primarily receive the grants--has been a major factor encouraging such development.

S. Rep. 93-583, *reprinted in* 1973 *U.S. Code Cong. & Ad. News* at 3219.

Presidential Executive Order 11988 on Floodplain Management[24] in 1977 established a national policy "to avoid direct or indirect support of floodplain development wherever there is a practicable alternative." The reasons reflected concern in part with the risk of flooding posed even by development in compliance with FEMA standards. This policy also reflected the desire to avoid the environmental risks posed by floodplain development.

Reflecting similar concerns, Congress and states have passed a variety of laws designed to protect against the environmental degradation that tends to accompany certain kinds of development in floodplains.[25]

These national policies have resulted in the nationwide regulation and limitation of land development in floodplains. By 1990, 18,023 (82%) of 20,506 communities with floodprone areas had adopted ordinances that at least complied with minimum federal regulatory requirements. *Interagency Floodplain Assessment* at 6-23.

Flood insurance regulations of the Federal Emergency

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[24] 47 Fed. Reg. 26951 (May 24, 1977).

[25] Many of these laws are summarized in Chapter 14 of the *Interagency Floodplain Assessment.* Some important regulatory laws which have widespread state and local equivalents, include: §404 of the Clean Water Act, 33 U.S.C. §1344 (1992) (regulating fill in wetlands, rivers and harbors); Coastal Zone Management Act, 16 U.S.C. §1451-1464 (1992) (requiring state comprehensive coastal zone management plans to address water quality protection, erosion, preservation of key natural functions among other impacts of coastal development); Food Security Act of 1985 ("Swampbuster"), 16 U.S.C. §3821-3824 (1992) (denying agricultural benefits to farmers who convert wetlands); Wild and Scenic Rivers Act, 16 U.S.C. §1271-1287 (1992) (limiting federal activities and federally authorized activities that would impact designated wild and scenic rivers).

Management Agency set the minimum standards for these almost nationwide floodplain ordinances.[26] FEMA's requirements are based on the 100 year flood and the 100 year floodplain. The 100 year flood is the flood estimated to have a 1% chance of occurring in any given year. The floodplain is the area estimated to be inundated in such a flood.

FEMA rules divide this floodplain into the floodway and the floodfringe. A view from the air of a flooded river typically reveals a portion of the floodplain with relatively deep water that moves rapidly downstream. If constricted, this "floodway" area will not convey water rapidly and will cause water upstream to back-up and flood more area. To prevent development from increasing flooding at all, there should be no constriction of the floodway. FEMA, however, actually establishes a more limited "regulatory floodway," which is the area that if constricted will cause no more than a one foot rise in flood levels. In this area, FEMA rules require that ordinances prohibit any development that would increase flood waters, and that essentially prohibits all conventional structural development.

The floodfringe occupies the remainder of the 100 year floodplain outside the floodway. Mechanically, the floodfringe stores floodwaters but does not convey the water. Development in the floodfringe therefore can displace flood storage and can increase floodwaters downstream but will generally not increase flooding upstream. In the 100 year floodfringe, residential structures must be elevated either on stilts or mounded earth to the highest flood level, and commercial structures must be

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[26] For a good summary of FEMA regulations, see *Interagency Floodplain Assessment* at 11-4 through 11-10. Regulations are set forth at 44 C.F.R. Parts 59-77. Key sections include §59.1 (defining "area of special flood hazard" and "regulatory floodway"); §59.22 (setting forth basic community requirements for participation in the program); §60.3 (setting forth minimum substantive standards).

elevated or made watertight through special construction.

Both of these rules apply only to new development. However, under FEMA rules, ordinances also require that any substantial improvement to a structure, or any reconstruction after substantial damage, must bring a structure up to code. 44 C.F.R. 60.3(c)(d) (1993). This requirement reflects the policy that improvements increase flood damage exposure, and therefore social and fiscal costs.

Although the regulations establish minimum ,standards, FEMA rules encourage and require communities to consider the adoption of specific tougher standards. *See* 44 C.F.R. §60.2; *see also* §60.1(d) (stating that "more restrictive" regulations are "encouraged"). FEMA will provide insurance rate discounts of up to 45% in communities that adopt stricter standards. *Interagency Floodplain Assessment* at 11-9,11-10. ASFPM members have also expressed strong encouragement for localities to adopt tougher standards tailored to local needs.[27] In doing so, they have expressed many reasons. FEMA minimum standards themselves do not preclude damage during the 100 year flood: The standards permit development to cause a one foot rise in flood levels and the standards do not require structures to insulate themselves from those potential flood levels. In addition, floods greater than the 1% annual chance flood are still possible, and, in fact, 30% of all flood damages occur outside the 100 year floodplain. *Interagency Floodplain Assessment* at 15-11. FEMA standards also do not map floodplains based on

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[27] For a summary of ASFPM views, see "Workshop #3: Land Use Regulations Going Beyond NFIP Minimums: State and Local Regulations," & "Workshop 8: Land Use Regulations II," in *Floodplain Harmony: Proceedings of the Twelfth Annual Conference of the Association of State Floodplain Managers* (Natural Hazards Research and Applications Information Center Special Publication #19, Boulder, Colorado 1988).

projected increases in levels as a result of future development. Increased drainage that results in the so-called "build-out" condition increases the area subject to flooding.

According to 1988 and 1992 state surveys by ASFPM, most states and localities have taken this advice and adopted ordinances that are stricter at least in some ways than FEMA requirements. *Interagency Floodplain Assessment* at 11-21--11-27. As of 1992, twenty-five states had floodway ordinances more stringent than FEMA standards. Association of State Floodplain Managers, *Floodplain Management 1992: State and Local Programs* 16 (1992) (hereinafter *Floodplain Management 1992*). Twelve states had established wider floodways by permitting no rise in flood levels or smaller than one foot rises. *Id.* As of 1988, Montana, Wisconsin, Indiana, Michigan and Washington prohibited either any new buildings or new residences in the floodway, and Arizona and Utah also had special limitations on building in floodplains. *Interagency Floodplain Assessment* at 11-22. In addition to these state standards, an unknown but clearly large number of communities have adopted stricter local ordinances. One survey by the Atlanta FEMA regional office in 1987 identified 236 communities in eight states that had established standards beyond FEMA requirements. *Id. at 11-21.* A partial survey by the Association of State Floodplain Managers revealed localities in Vermont, Wisconsin and Ohio that have prohibited any permanent development in the floodplain. *Floodplain Management 1992* at 16. Many states also identify their regulatory 100 year floodplains using not present conditions, as allowed by FEMA, but increased flood conditions likely to result from projected increases in development. *Interagency Floodplain Assessment* at 6-28.

II. THE CITY OF TIGARD'S COMPREHENSIVE FLOOD MANAGEMENT SYSTEM IS CONSISTENT WITH NATIONAL POLICY.

The City of Tigard commissioned a comprehensive flood study in 1978, which would assist Tigard to enter the national flood insurance program. *Master Drainage Plan City of Tigard* (R-Doc No. F at cover letter and 9-1). Under FEMA regulations, Tigard was not only required to adopt an ordinance meeting FEMA minimum standards, but also to consider adopting certain additional standards. These included regulations that would address "[a]dverse effects of flood plain development on existing development," "[i]mprovement of local drainage to control increased runoff that might increase the danger of flooding to other properties," and "[p]rohibition of any alteration or relocation of a watercourse, except as part of an overall drainage basin plan." 44 C.F.R. Sec. 60.22(c)(4)(9)(13). In addition, Tigard had to consider "flood plain management regulations" beyond minimum requirements that would "[p]ermit only that development of flood-prone areas which (i) is appropriate in light of the probability of flood damage and the need to reduce flood losses, (ii) is an acceptable social and economic use of the land in relation to the hazards involved, and (iii) does not increase the danger to human life." 44 C.F.R. Sec. 60.22(a)(1).

Tigard's consultants made a comprehensive analysis of present and potential future flood problems using engineering studies and Corps of Engineers floodplain maps. The study concluded that flooding already occurred regularly in Fanno Creek and that existing and new development both in and near the floodplain of Fanno Creek faced increased risk. The reason was "that tremendous increases in impervious area are expected to occur within the Fanno Creek basin" by no later than the year 2000. *Master Drainage Plan* at 5-1. These increases would mean that the 100 year floodplain would effectively become the

ten year floodplain, and flows during the 100% floodplain were expected to increase by 28.7% at Dolan's location along Fanno Creek.[28] That would cause severe increased flooding in downtown Tigard beyond the existing 100 year floodplain. *Id.* at 4-5, 5-14. The report also found that existing and future development were and would contribute to serious water quality degradation through stormwater runoff. *Id.* at 4-20.

To address these problems, the *Master Drainage Plan* included a mixture of structural and non-structural controls in keeping with FEMA recommendations. First, the master plan recommended continued restrictions on development in floodplains, particularly in key drainage areas. *Id.* at 9-1. To limit the flows generated by additional development, the drainage plan recommended specific requirements for new development to increase water storage and thereby limit increases in discharges by storing water generated in the so-called 25-year flood. *Id.* at 7-9, 7-10. But determining that such storage would be ineffective against the 100-year flood, *id.* at 7-9, the plan recommended channel modifications along Fanno Creek that would allow the Creek to handle and convey these increased flows, and even to improve on existing flood conditions. *Id.* at 6-8.

Tigard has implemented this comprehensive plan with zoning and land use rules that distinguish two kinds of impacts. One is the impact from the increased stormwater caused by any new development. Developers meet these responsibilities through stormwater controls or impact fees. But the other impact is the increased exposure to flooding caused by development near the existing 100 year floodplain, which, absent structural improvements to the flood channel, would be exposed

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[28] The Dolan's building is off Southwest Main Street, and estimates for increased peak flows are provided for this site on page 5-5 of the *Master Drainage Plan*; see also *id.* at 5-3.

to flooding in the future. (Many states, faced with this problem, increase the size of the floodplain subject to restrictions.) See *supra* at 16. Consistent with FEMA recommendations, Tigard addressed this increased exposure by a requirement not to build in the *existing* 100 year floodplain, and a requirement that developers permit the City in certain areas to improve those channels to prevent future flooding. In doing so, again as urged by FEMA rules, Tigard considered what development would be "appropriate" and "economical" in light of flood damages. Tigard found these restrictions appropriate in part because the 100 year floodplain area was "virtually unusable due to the year-round water flow of the Creek." *Final Order of the City of Tigard* at 29 (Pet. App. G.)

III. TIGARD'S DEVELOPMENT CONDITION DOES NOT CONSTITUTE A TAKING.

A. *Tigard's Regulation Satisfies* Nollan

1. Nollan *simply requires that easement conditions mitigate the impacts of development.*

If Tigard had done no more in this case than prohibit Dolan from building in the floodplain, nothing in the record would suggest any serious taking question. Dolan has not even alleged a severe economic impact, let alone the denial of all economically viable use held a taking in *Lucas v. South Carolina Coastal Council*, 112 S. Ct. 2886 (1992). The regulation would serve some of the highest governmental purposes, including protection of human life and property, as well as protection against a variety of environmental harms.[29]

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[29] *See Keystone Bituminous Coal Ass'n v. DeBenedictis*, 480 U.S. 470 (1987) (regulation at least much less likely to be taking if

The regulation would be consistent with setback regulations upheld by this Court long ago. *See Gorieb v. Fox*, 274 U.S. 603 (1927). In addition, any interference with reasonable investment-backed expectations is slight because of the now substantial history and common nature of development prohibitions or severe restrictions in floodplains, as discussed above.[30] For these reasons, courts have overwhelmingly rejected takings challenges to floodplain regulations.[31]

serving these purposes). Although *Lucas* indicated that the prevention of these kinds of impacts in and of itself does not justify a regulation that denies all economically viable use, prevention of such impacts continues to be a strong factor in the determination that a regulation does constitute a taking. *See* cases cited in *Lucas*, 112 S. Ct. at 2897.

[30] *See Concrete Pipe & Productions of California, Inc. v. Construction Laborers Pension Trust for Southern California*, 113 S. Ct. 2264, 2291 (1993) (holding that those who engage in economic activities in a highly regulated field do not have a reasonable expectation against a change in that regulation and citing many cases).

[31] *Adolph v. Federal Emergency Management Agency*, 854 F.2d 732 (5th Cir. 1988) (holding that FEMA land use regulations were not taking as a matter of law); *Texas Landowners Rights Ass'n v. Harris*, 453 F. Supp. 1025 (D.D.C. 1978), *aff'd mem.*, 598 F.2d 311 (D.C. Cir.), *cert. denied*, 444 U.S. 927 (1979); *First English Evangelical Lutheran Church of Glendale v. County of Los Angeles*, 258 Cal. Rptr. 893 (Cal. App. 1989) (upholding development prohibition in floodplain); *April v. City of Broken Arrow*, 775 P.2d 1347 (Okl. 1989) (upholding ordinance regulating development in floodplain); *Responsible Citizens v. City of Asheville*, 308 N.C. 255, 302 S.E.2d 204 (1983) (upholding floodplain regulations); *Town of Idialantic v. McNulty*, 400 So.2d 1227 (Fla. App. 1981) (upholding dune protection setback ordinance in part because of flood hazard); *Usdin v. State Department of Environmental Protection*, 173 N.J. Super.

This case raises questions because the City of Tigard has required that Dolan provide an easement on her land for flood protection improvement at public expense, specifically through widening of the river channel.[32] Physical invasions or occupations enjoy special constitutional protection because they go to the heart of the Just Compensation Clause. *See Loretto*

311, 414 A.2d 280 (1980) (upholding state prohibition against structures in floodway); *Pope v. City of Atlanta*, 242 Ga. 331, 249 S.E.2d. 16 (1978), *cert. denied*, 440 U.S. 936 (1979) (upholding impervious cover restriction in floodplain prohibiting tennis court); *Foreman v. State Department of Natural Resources*, 180 Ind. App. 94, 387 N.E.2d 455 (1979) (upholding prohibition from making fill deposits in a floodway); *Krahl v. Nine Mile Creek Watershed District*, 283 N.W.2d 538 (Minn. 1979) (upholding encroachment limitations in floodplain); *Maple Leaf Investors, Inc. v. State Dept. of Ecology*, 88 Wash. 2d 726, 565 P.2d 1162 (1977) (upholding denial of a permit for proposed houses in floodway because of danger to persons and to property downstream); *Turner v. County of Del Norte*, 24 Cal. App. 3d 311, 101 Cal. Rptr. 93 (1972) (upholding ordinance limiting floodplain use to parks and agriculture); *Turnpike Realty Co. v. Town of Dedham*, 362 Mass. 221, 284 N.E.2d 891 (1972), *cert. denied*, 409 U.S. 1108 (1973) (upholding regulation limiting floodplain to open space uses against taking claim despite testimony that land reduced in value by more than 85%); *Spiegle v. Beach Haven*, 46 N.J. 479, 218 A.2d 129 (1966) (upholding setback ordinance in coastal area against taking claim). *But see Dooley v. Town Plan & Zoning Comm'n*, 151 Conn. 304 197 A.2d 770 (1964) (taking where floodplain zoning greatly reduced value of land).

[32] Because the rationale behind the Nollan nexus test was the effort to prevent physical invasions by subterfuge, ASFPM agrees with lower court decisions that the test applies only to exactions that involve physical encroachment of land. *See, e.g., Commercial Builders v. Sacramento*, 941 F.2d 872, 874 (9th Cir. 1991).

v. *Teleprompter Manhattan CATV Corp.* 458 U.S. 419, 426, 102 S. Ct. 3164, 3171 (1982). Yet, this Court has made clear that an easement condition does not itself constitute a physical taking because the "government effects a physical taking only where it *requires* the landowner to submit to the physical occupation of his land." *Yee v. City of Escondido*, 112 S. Ct. 1522, 1528 (1992) (emphasis in original).

In *Nollan v. California Coastal Commission*, 483 U.S. 825 (1987), this Court attempted to insure that governments would not use easement conditions to accomplish physical invasions by subterfuge. It did so in two ways. First, it required a reasonable nexus between the legitimate government interest pursued by the regulatory restrictions and the easement condition. Second, *Nollan* made clear that the desire "of obtaining an easement to serve some valid governmental purpose but without payment of compensation" is not in and of itself a legitimate public interest. *Id.* at 837. The valid public purpose necessary to warrant an easement condition in a development permit must involve mitigating an impact caused by the development.[33]

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[33] The ASFPM does not believe that an easement condition is constitutional only if an absolute prohibition on development would itself not be a taking. For example, localities routinely require urban developers to make sidewalks available for public use to prevent negative impacts on pedestrian traffic. That condition should not constitute a taking even if a blanket building prohibition might, in some circumstances, constitute a taking. The economic impact of the easement condition is simply far less, and far more proportional to the impacts of the development, than a blanket prohibition. It therefore is warranted for less compelling reasons. *See Pennell v. City of San Jose*, 485 U.S. 1, 20 (1988) (Scalia, J., concurring and dissenting) (suggesting need only for "cause-and effect" relationship between dedication condition and problem caused by development).

ASFPM also does not believe that stricter scrutiny of legislative

2. *Tigard's easement conditions meets the Nollan test because it mitigates increased exposure to flood damages.*

Dolan's request to increase development would impact flooding and water quality problems in two potential ways. First, like development anywhere in the watershed, the development would increase stormwater flows, with flooding and water quality impacts. Second, and more importantly for the purposes of this case, the development would increase the property exposed to damage from flooding. It would do so even though expected development throughout Tigard would apparently put Dolan's property at risk of the 100 year flood.[34]

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reasoning than established by the due process clause is necessary to protect property rights. *Nollan* explicitly applied only a rational basis scrutiny, 483 U.S. at 838, and this Court recently stated that if "due process arguments are unavailing, 'it would be surprising indeed to discover' the challenged statute nonetheless violating the Takings clause." *Concrete Pipe & Products of California, Inc. v. Construction Laborers Pension Trust for Southern California*, 113 S. Ct. 2264, 2289 (1993) (quotation citation omitted). The due process clause and Just Compensation clause treat easement conditions differently not through the standard of scrutiny but through the definition of legitimate public interest. Under the due process clause, obtaining an easement for public access can be valid for a full range of public purposes. But under the Takings clause, obtaining an easement without compensation through a development condition is only valid if the easement serves the purpose of mitigating the impact of the development, or, correlatively, provides benefits to the development.

[34] The Master Drainage Plan (R-Doc No. F, at 4-5) predicted severe increased flooding around Southwest Main Street, Dolan's address, as a result of increased flows accompanying development. The predicted flood elevations of approximately 152.5

Dolan's claim that the easement dedication condition does not relate to impacts of Dolan's development requires that this Court ignore the distinction between property in or adjacent to floodplains and property that itself is at no risk of flooding. The floodplain easement dedication was designed to address the increased property damage likely to result from Dolan's expanded development in a floodprone area. To address that problem, Tigard undertook in large part at public expense to improve the flood carrying capacity of the original 100 year channel. Although Dolan and other floodplain landowners were required to donate the property, the City picked up the substantial expense of the channelization work itself. The *Master Drainage Plan* indicated this strategy was the cheapest way for Tigard to guard against the increased flood damages likely to result from Dolan's development.

B. ***The Floodplain Easement Requirement Was Not So Disproportionate As to Imply Subterfuge.***

1. *Dolan's proposed development would receive many special benefits from Tigard's comprehensive flood management system, which includes the easement.*

Dolan also argues that the requirement for a floodplain easement fails for lack of proportionality. Although, as discussed below, ASFPM disagrees with Dolan's test for proportionality, it agrees that *Nollan's* nexus test includes some notion of proportionality. Even if an easement serves the

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feet in figure 6-3 without channel improvements indicates that Dolan's planned property at the same elevation would be flooded but would not be flooded with channel improvements that would lower flood levels by approximately five feet.

purpose of mitigating a development impact, the burden imposed on the landowner could be so disproportionate to the burden on the community that courts might safely treat a development condition as a subterfuge for obtaining the easement.

In this case, the facts support no such inference. A notion of proportionality requires a comparison of the potential burden imposed by Dolan's new development and the net burden of the condition on Dolan. But the "net burden" on Dolan must include costs offset by special benefits. Viewed this way, the record suggests that Dolan actually received significant net benefits.

The reason is simple: Dolan and other landowners in and adjacent to the floodplain are the primary beneficiaries of Tigard's comprehensive floodplain management system to reduce the risk of flooding. If Tigard took no action, development would not only expose areas now in the floodplain to regular flooding, but much of the remainder of Dolan's property would also be subject to the 100 year flood. See note 34 *supra*. Dolan might have a theoretical common law claim against all landowners in the Fanno Creek watershed who helped to increase flood flows. But as a practical matter, common law litigation to address a problem caused only as a result of the cumulative actions of many landowners would be difficult, if not impossible. Instead, Tigard's comprehensive plan did make all watershed developers responsible for managing stormwater to the limit of the 25 year flood. That benefits Dolan although it cannot protect her from longer floods. Tigard therefore required Dolan and other new developers to contribute a few feet of property. In return, Tigard would pay to channelize not only Tigard's floodplain area but adjacent areas to keep the remainder of Dolan's property out of the floodplain.

Dolan also benefits from Tigard's comprehensive plan because it makes Dolan eligible for the federal flood insurance program (and may make Dolan eligible for reduced insurance rates). That eligibility on the community level also

automatically makes Dolan eligible for federal disaster assistance.

On the cost side, Dolan's proposed new development would itself not only increase flood flows, but it would greatly increase the amount and value of property exposed to flood damages. As discussed above, that exposure has significant potential impacts on flood levels up and downstream, and on water quality.

Ultimately, the costs of flood protection must be split among many different kinds of landowners: those with existing development outside the floodplain, those with new development outside the floodplain, those with existing development inside or adjacent to the floodplain, and those with new development in that area. Dolan is in the last category, and there is no reason to believe the easement demanded of her is disproportionate to the burdens and benefits she receives from the flood management system.

> 2. *The suggestion that proportionality be quantified has no practical meaning because apportioning responsibility for preventing flood damages inherently involves social judgments.*

To assist her proportionality argument, Dolan contends that the City must show a precise, quantifiable, proportionality between the impact of a development and the development condition. The first problem with this argument is that it begs the question of what exactly should be quantified. Dolan seems to suggest that there must be a quantitative equality between the amount of runoff water generated by a development and the amount of water that would be controlled by the channel improvement. But that is a physically meaningless comparison.

The purpose of a channel improvement is not to store water but to convey it rapidly downstream and out of the problem area. It will convey floodwaters from a wide variety of sources, and the amount of conveyance will therefore be far greater than the amount of runoff from any one site. But that does not

represent a huge contribution by each individual channel area improved because the utility of a channel improvement at any one point depends on the utility of the adjacent channel. There is little value, and generally a problem, in conveying water more rapidly through one portion of a stream if the downstream portion lacks the same conveyance capacity because that would simply mean more flooding at the point of bottleneck. Any one channel area only makes a small but necessary contribution to the utility of the channel as a whole. There is no obvious way to compare the improved utility of any portion of a channel with the amount of increased runoff from one particular site.

More fundamentally, Dolan's argument makes little sense because water alone does not create a flooding problem. Floods are a natural development, but a flood problem requires, first, floodwaters, and second, a human structure or other use in the path of the flood that can be damaged. Both the person who builds in a floodplain and the upstream developer contribute to a flooding problem. Who contributes more to a flooding problem -- and who benefits more from an effort to decrease a flooding problem -- depends not on any question of science but on a determination of social responsibility. Tigard's ordinance assigned significant responsibility to both based largely on practical engineering considerations. Those kinds of determinations are exactly the kind that governments, rather than courts, are given the primary assignment of making.

> 3. *A requirement for perfect equality in benefits and burdens would unduly constrain local officials from utilizing broader criteria of fairness.*

Dolan's notion of proportionality also legally errs because the Takings clause does not prohibit land use regulations from any disproportion in benefits and burdens. Floodplain ordinances often attempt a rough equality in benefits and burdens. But Dolan's argument would excessively limit the discretion of local

officials to utilize notions of fairness that might involve some redistribution of benefits. For example, floodplain management rules typically impose lesser burdens on existing development out of respect for their reliance on preexisting regulatory schemes. Respecting this governmental role, this Court has therefore rejected Dolan's underlying contention. As it stated in *Yee v. City of Escondido*, 112 S. Ct. 1522, 1529 (1992):

> Petitioners emphasize that the ordinance transfers wealth from park owners to incumbent mobile home owners. Other forms of land use regulation, however, can also be said to transfer wealth from the one who is regulated to another. Ordinary rent control often transfers wealth from landlords to tenants by reducing the landlords' income and the tenants' monthly payments . . . . Traditional zoning regulations can transfer wealth from those whose activities are prohibited to their neighbors; when a property owner is barred from mining coal on his land, for example, the value of his property may decline but the value of his neighbor's property may rise. . . . [T]he existence of the [wealth] transfer in itself does not convert regulation into physical invasion.

Indeed, it would be strange if the Constitution, through the Takings clause, prohibited any redistribution in wealth through regulation when it effectively authorizes explicit, direct redistributions in wealth through the real estate taxing system based on a broad array of legislative judgments of fairness. *See, e.g., Nordlinger v. Hahn*, 112 U.S. 2326 (1992) (upholding tax system that resulted in large discrepancies in real estate taxes based on the time of purchase of the property).

C. *Requiring Development Conditions Based on Pre-existing Plans Permits Development Impacts to be Mitigated More Efficiently and Fairly.*

Dolan claims that an inference of subterfuge is warranted because the floodplain easement (and bicycle path easement) were designed to implement a common, general design, and were not developed specifically as a response to the burdens imposed by Dolan's proposed development. For example, Dolan claims that the bicycle path easement and development restriction purpose are unrelated because the increased traffic caused by Dolan's type of retail store is not likely to be bicycle traffic.

But a comprehensive plan does not suggest subterfuge. To the contrary, comprehensive planning provides an efficient means of addressing the infrastructure demands of new development at the lowest possible cost. If each development had to develop its own flood control and transportation system, unconnected to the system developed around it, the result would be costly and chaotic.

For example, although this brief does not generally address the transportation easement, imagine if, as suggested by Dolan, the transportation infrastructure required of each developer had to relate directly to the predicted form of traffic likely for that development. A lumber store might invite customers with trucks, a supermarket customers in cars, and a health food store customers on bicycles. Dolan's argument would lead to a truck road, connected to a car road, connected to a bicycle path.

Similarly, the most efficient flood management system requires that channels remain unblocked and be capable of receiving the full water flowing into a portion of a channel from upstream. The alternative would be large flows feeding water into more constricted areas so that the system could actually increase flood problems. Flood management systems can only work if the flow discharge and conveyance systems on each property are intelligently integrated.

Not only is comprehensive flood management more efficient, it is also more accurate and more fair. A comprehensive analysis permits a greater dedication of technical resources and allows a cumulative analysis of how potential development can impact overall flooding levels. A comprehensive plan reduces the likelihood that individual decisions will be capricious and impose burdens unfairly.

CONCLUSION

For all the foregoing reasons, this Court should affirm the judgment of the Court below.

Respectfully submitted,

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